Saskatchewan Energy and Mines

Saskatchewan
Geological Survey

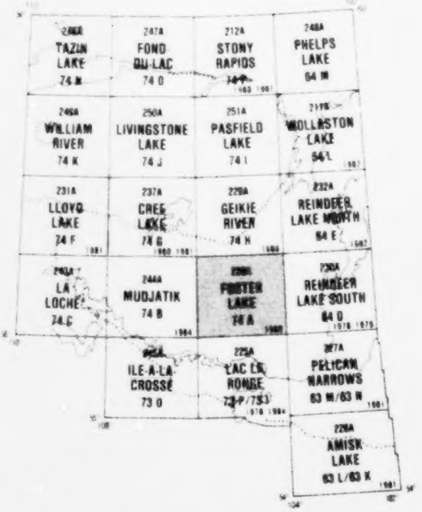
Report 252

Metallogenic Map Series:

Foster Lake, NTS Area 74A

First Edition, 1986

compiled by Blaine P. Scott


TAZIN LAKE
247A
FOND DU-LAC
74 O
212A
STONY RAPIDS
248A
PHELPS LAKE
64 M
WILLIAM RIVER
74 K
250A
LIVINGSTONE LAKE
74 J
251A
PASFIELD LAKE
74 I
WOLLASTON LAKE
231A
LLOYD LAKE
74 F
1981
237A
CREE LAKE
74 G
1980 1981
229A
GEIKIE RIVER
74 H
232A
REINDEER LAKE NORTH
64 E
1982
LA LOCHE
74 C
244A
MUDJATIK
74 B
1984
FOSTER LAKE
74 A
REINDEER LAKE SOUTH
64 D
1978 1979
ILE-A-LA-CROSSE
73 O
225A
LAC LA RONGE
1978 1984
PELICAN NARROWS
63 M/63 N
1981
AMISK LAKE
63 L/63 K
1981
108
104

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Printed under the authority of the
Minister of Energy and Mines

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Mineral Development Branch

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Table of Mineral Occurrences

The abbreviations of mineral names used in this table are those standardized by the Geological Survey of Canada, with additions where necessary:

ann	annabergite
ant	anthraxolite
asp	arsenopyrite
az	azurite
be	beryl
bo	bornite
br	brannerite
car	carnotite
ca	calcite
cor	corundum
cct	chalcocite
cp	chalcopyrite
cub	cubanite
cv	covellite
dv	davidite
ery	erythrite
fl	fluorite
gah	gahnite
gn	galena
gf	graphite
gum	gummite
hem	hematite
il	ilmenite
ma	marcasite
mag	magnetite
mal	malachite
mo	molybdenite
mz	monazite
pch	pitchblende
PGM	platinum group metals
pn	pentlandite
po	pyrrhotite
py	pyrite
ru	rutile
REE	rare earth elements
sb	stibnite
sp	sphalerite
spr	sperrylite
th	thorite
thu	thucolite
tr	trace amount
u	unidentified uranium mineral
uph	uranophane
ur	uraninite
uth	uranothorianite
vi	violarite

Table 1a - Mineral Occurrences Identified in SMDI File

SMDI No.	Elements Present	Name of Occurrence/ General Location	NTS 74A-	Minerals Present	Host Rock/ Structures and Remarks	Reference Numbers
900	Ag (Cu, Au, Fe)	east of Partington Lake	01	po, py, cp	intermediate to rhyolitic volcanics	10, 149, 181
901	Au (Cu, Mo Sb, Ag, Fe)	Jolu-Mallard-Decade Mine	01	native Au and Cu, py, po, cp, ma, mo, sb	quartz±tourmaline veins near Star Lake Pluton	14, 37, 39, 41, 44, 49, 51, 81, 224
902	Au (Fe, Cu, Pb, Zn)	Jojay showing	01	Au, po, py, cp, gn, sp	north-trending shear, with quartz and carbonate	14, 36, 40, 42, 49, 81, 213
903	Au (Cu, Fe)	Tower Lake	01	Au, py, cp	sheared, silicified, carbonatized granodiorite, andesite and dacite	11, 49, 149
904	Au (Fe)	north of Puswawao Lake	01	Au, py	meta-andesite and dacite, local quartz-sericite schist	12, 14, 142, 149
905	Au (Fe)	Allen group, Bryenton Lake	01	Au, py	pyritic shear zones in metavolcanics	14, 46, 73, 149
906	Au (Cu, Fe)	Kaslo claims, Narrow Lake	01	Au, cp, py	quartz veins in shears in volcanics	49, 153, 232
907a	Au (Cu, Fe)	Kalna claims, Island Lake	01	Au, cp	quartz vein in massive basic tuff	6, 14, 47, 81
907b	C (Fe)	near east shore, Alpat Lake	01	gf, py, po	shears in greywacke and quartzite	14, 81, 82
908	Au	north-northwest of Jaysmith Lake	01	Au	quartz veins in narrow shears	133, 149, 162
909	Au (Fe)	north-northeast of Puswawao Lake	01	Au, py	quartz veins in andesite and dacite	12, 142, 149
910	Au	northeast of Puswawao Lake (east of Hayes Lake)	01	Au	quartz vein in basalt and andesite	12, 149
911	Au	west of Brindson Lake	01	Au	migmatized andesite	12, 142, 149
912	Au (Fe)	Allen group, Bryenton Lake	01	Au, py	quartz veins in shear zone	14, 46, 149
913	Au (Ag, Cu, Pb, Zn, Fe)	south shore, Centre Lake	01	Au, cp, gn, sp, py, bo	quartz veins in volcanics and granodiorite	10, 11, 49, 149, 213
914	Au (Cu, Fe)	west of Tower Lake	01	Au, py, cp	quartz-carbonate veins in andesite	11

SMDI No.	Elements Present	Name of Occurrence/ General Location	NTS 74A-	Minerals Present	Host Rock/ Structures and Remarks	Reference Numbers
915	Cu (Fe, Ni)	west-southwest of Brindson Lake	01	cp, po	west margin, gabbro-pyroxenite pluton	12, 149, 213
916	Fe	Partington Lake	01	mag	banded iron formation	181, 182
917	Fe (Zn, Cu, Ni)	west of Kirk Lake	01	py, po, cp, sp	silicified mafic volcanics, in andesite	14, 17, 18, 83, 86, 87, 112, 117, 119, 149, 179, 195
918	Pb (Fe)	Bryenton Lake	01	py, gn	quartz porphyry	12, 149
919	Fe	southeast of Blair Lake	01	po, py	calc-silicate gneiss	181
920	Fe	Puswawao Lake	01	py	quartz porphyry, intruding volcanics	48, 149
921	U	southeast of Maribelli Lake	01	uph	pegmatite in pelitic rock	81, 88, 142
922	U (Cu, Mo, Fe)	Betsy Lake showing, south of Karin Lake	14	uph, py, cp, mo	pegmatite in granite gneiss	100, 109, 110, 173, 174, 223
923	Zn (Cu, Pb, Fe)	southeast of Partington Lake	01	sp, po, py, cp, gn	dacite, rhyolite and greywacke	10, 84, 85, 149, 181, 182, 183
924	Zn (Fe, Cu)	southwest of Partington Lake	01	sp, py, cp	northeast-trending metavolcanics	181, 182
925	Zn (Cu, Ni, C, Fe)	southwest of Partington Lake	01	sp, po, py, gf	graphitic schist, metasediments, metadiorite and dacite	84, 85
926	Cu (Ni, Fe)	southwest bay, Logue Lake	02	cp, po	metagabbro and metapyroxenite	146, 154, 172
927	Cu	south of Dunlop Lake	03	bo	shear zone in micaceous metasedimentary migmatite	172, 214
928a	Ni (Cu)	south-southwest of Nagle Lake	03	po	pyroxenite dyke in migmatite	14, 21, 22, 138, 161, 172, 190, 213
928b	Cu (Fe)	south-southwest of Nagle Lake	03	cp, po	gabbro	14, 61, 138, 172
928c	Fe	northeast of Nagle Lake	03	po	gossaned metasedimentary rocks	14, 21, 22, 172
929	Fe (Cu, Ni)	west shore, Dunn Lake	03	py, po, cp, mag	metasedimentary gneisses, local pegmatite	19, 20, 172
930	Cu (Fe)	Tosi showing, southwest of Hewetson Lake	04	cct, cp, py, bo	northeast-trending shear in biotite gneiss, near basement contact	29, 121, 122, 123, 124, 172
931	Cu (Fe)	MacRae Lake showing	04	cp, py, po	pegmatite with coarse amphibolite in granitic gneiss	71, 227
932	Zn (Pb)	west-southwest of Hewetson Lake	04	sp, gn	quartzite in metasediments	172
933	Zn (Pb, Ag, C, Fe)	Fable Lake showing	04	sp, gn, py, gf	quartzite and pelitic gneiss	24, 26, 28, 71, 111, 114, 164, 172
934	Zn (C, Fe)	George showing, northwest of Hewetson Lake	04	sp, gf, py	quartzite	172
936	Zn (Pb, Fe)	west-southwest of Fable Lake	04	sp, gn, py	psammite, garnetiferous gneisses	71

SMDI No.	Elements Present	Name of Occurrence/ General Location	NTS 74A-	Minerals Present	Host Rock/ Structures and Remarks	Reference Numbers
937	Au (Fe)	Beaverdam prospect, between Jay and Place Lakes	05	Au, py	shears in biotite gneiss	51, 72
938	Al	Corundum showing, northwest of Stover Lake	05	cor	syenite sills in migmatite	67
939a	F (U)	northeast of Robyn Lake	05	fl, uph	fractures in pegmatite	229
939b	U	north of Robyn Lake	05	gum	on biotite in pegmatite	227
940a	U (Th, Fe, C)	north end, Pipewrench Lake	05	uph, py, cp, gf, mo	pegmatite interlayered with pelite	17, 23, 223
940b	U	near west shore, Pipewrench Lake	05	uph, mo	quartz and biotite-rich phases of pegmatite; shear at east contact of pegmatite	17, 23, 223
941	U	narrows of Narrow Lake	05	uph	pegmatite, garnetiferous gneiss	18, 23, 66
942	U (Th, Fe, Cu, Mo)	Boom Lake	05	uph, th, mo, py, cp	gossans, interlayered pelites, pegmatites	17, 18, 23, 66, 223
943	Zn (Fe)	north of Robyn Lake	05	sp, py	westernmost of two quartzite bands	72, 124, 128, 143, 166
944	Zn	Sito Lake East	05	sp, gah	quartzite	24, 25, 26, 27, 30, 31, 33, 34, 72, 113, 121, 124, 125, 126, 127, 128, 129, 166, 167, 168, 227, 229
945	Zn(?) (Fe, Cu, Pb, C)	near east end, Stover Lake	05	sp(?), gf	feldspathic quartzite	67
946	Zn	Sito Lake West	05	sp, gah	arkose and quartzite	24, 25, 26, 27, 30, 31, 33, 72, 113, 121, 125, 126, 127, 128, 129, 166, 167, 168, 227, 229
947	Zn (Fe)	Sito Lake Southwest	05	sp, py	green plagioclase pegmatite, on sheared basement contact	24, 32, 230
948a	Cu	'A' showing, west of MacNeil Lake	06	cp	meta-arkose	89, 150
948b	Cu	east of Sommerfield Lake	06	cp	meta-arkose	89, 150
949	Cu (Mo, Fe, F)	north of Fannon Lake	06	cct, cp, py, po, mo, mal, az, fl	meta-arkose	57, 58, 150
950	F (Fe)	west shore, MacNeil Lake	06	fl, hem, mag, ca	filling tension fractures, replacing matrix in metaconglomerate; veinlets in augen gneiss	150
951	F	northwest shore, Fannon Lake	06	fl	filling tension fractures, replacing matrix in metaconglomerate; veinlets in augen gneiss	89, 149, 221
952	Mo	west-southwest of Fannon Lake	06	mo	quartzite lens in meta-arkose	57, 58, 221
953a	Fe (C)	west of Barnett Lake	06	py, gf, po	zones in metasediments	116, 117
953b	U	southwest of Barnett Lake	06	gum	pegmatite	227, 229

SMDI No.	Elements Present	Name of Occurrence/ General Location	NTS 74A-	Minerals Present	Host Rock/ Structures and Remarks	Reference Numbers
954	Cu (Fe)	Red Hill showing	07	po, py, Cu	migmatite-greywacke	14, 45, 78, 144, 205
955a	Cu (Fe)	southeast end, North Lake	07	py, po, cp	quartz-hornblende-biotite-feldspar gneiss, pegmatite	21, 22, 78, 198, 200, 202, 205, 206, 209
955b	Fe	north of North Lake	07	po, py, cp(tr)	quartz-biotite-feldspar gneiss, pegmatite	78, 205, 206
955c	Fe	east of Hockley Lake	07	po	migmatite	78, 205, 206
956	Cu (Fe, C)	northwest of Rottenstone Lake	07	cp, py, po, gf	quartz-biotite-feldspar gneiss	21, 78, 197, 201, 205
957	Cu (Fe, Ni, Zn, Co, Ag)	northwest of Deighton Lake	07	bo, py, po	quartz-biotite gneiss	78, 199, 205
958	Ni (Cu, Ag, Au, Pt, Pd)	Rottenstone (Hall) Mine	07	po, vi, ann, cp, bo, pn, spr, cub	harzburgite-orthopyroxenite in migmatite	21, 22, 35, 45, 139, 187, 206, 207, 212, 230
959	Ni (Cu, Zn, Pb)	Tremblay-Olsen showing	07	po, cp	hypersthene pyroxenite in migmatite	14, 44, 45, 78, 120, 144, 148, 177, 178, 179, 199, 207
960a	Zn (Ni, Cu, Fe)	near north end, Rottenstone Lake	07	sp, py, po	quartz-garnet-hornblende-biotite gneiss	21, 22, 196, 205
960b	Ni (Cu, Fe, Zn)	north of Rottenstone Lake	07	py, po	quartz-garnet-hornblende-biotite gneiss	21, 22, 196, 205
960c	Ag (Ni, Cu, Zn, Mo, Fe)	northeast of Rottenstone Lake	07	Ag, py, po, cp, mo	quartz-garnet-hornblende-biotite gneiss	21, 22, 196, 205
961	Au (Fe, Ni, C, Cu)	2.0 km south of Copp Lake	08	py, po, cp gf, Au	quartz-hornblende-mica gneiss	80, 136, 142
962a	Cu (Fe, Au, C, Ni)	6 km northeast of Reef Lake	08	py, po, cp, gf	gabbro to pyroxenite dykes	134, 216, 217, 218, 219
962b	Fe (C)	3.5 km northeast of Reef Lake	08	py, po, gf	hornblende-biotite gneiss with quartzite	134, 216, 217, 218, 219
963	Ni (Fe, Cu)	northeast of Reef Lake	08	po, py, cp	gabbro sill	80, 213, 215, 217, 219, 233
964a	Fe (Au, Ni)	northwest shore, Reef Lake	08	po, py	hornblende-biotite gneiss	80, 135
964b	Fe (Au, Ni)	north of Reef Lake	08	po, py	hornblende-biotite gneiss, quartzite	80, 135
965	Fe	east of Hickson Lake	08	py, po, ma	quartz-biotite gneiss, calc-silicate gneiss and altered volcanics	61, 63, 78
966	U	showing 'J', northeast of Hickson Lake	08	uph	pegmatite	80, 142
967	U	Ostapovitch showing, north of Copp Lake	08	uph	pegmatite	80, 142
968	U	southwest shore, Copp Lake	08	uph	pegmatite	80, 142
969a	Cu (Fe, C)	northeast of Deception Lake	09	mag, gf, cp, po, py	biotite gneiss	191, 192, 193, 194, 203, 206

SMDI No.	Elements Present	Name of Occurrence/ General Location	NTS 74A-	Minerals Present	Host Rock/ Structures and Remarks	Reference Numbers
969b	Fe (Cu)	northeast of Deception Lake	09	py, po, cp	biotite gneiss	62
969c	Fe (Cu, C)	northeast of Deception Lake	09	po, py, cp, gf	biotite gneiss	192
970	Fe (Cu)	southeast of Bachmeier Lake	10	py, po, cp	migmatite	205, 206, 210
971	Cu (Co, Ag, Fe, As)	southwest of Astleford Lake	11	cp, py, po, asp, ery	quartzite in meta-arkose	57, 58, 59, 78
972	Cu (Fe)	east of Middle Foster Lake	11	cp, po, py, mag	at granodiorite/metasediment contact	130, 131, 137
973	Mo (U, Fe)	southeast of Upper Foster Lake	11	mo, uph, py	pegmatite, metasediment	69, 131, 145
974	Fe (C, Au(?))	Meg Myles Lake	11	py, po, gf	meta-arkose, rhyolite	153, 208, 211
975	Fe	northeast of Meg Myles Lake	11	py, po	metasediments, volcanics	78, 148
976	U	west shore, Middle Foster Lake	11	uph	pegmatite, metasediment	1, 68, 130, 131
977	U (Fe, Mo, Cu)	west of Upper Foster Lake	11	uph, mo, cp, py	pegmatite, metasediment	69, 75, 130, 145, 235
978	U	Baska showing, Kotelmach Lake	11	uph, ur, dv	pegmatite	13, 131, 145
979	U	southeast of Upper Foster Lake	11	uph	pegmatite, metasediments	3, 130, 131, 144, 159
980	U	Eldorado showing, Kulyk Lake	11	br, ru	pegmatite contacts, internal fractures, southern granitized band	70, 130, 131, 144
981a	U (Th, Fe)	northwest of Babyloon (Kostyshyn) Lake	11	ur, th, py	biotitic inclusions in pegmatite	7, 8, 9, 78, 105, 153
981b	U (Th, Fe, Cu, Mo)	north-northeast of Babyloon Lake	11	uph, th, py, po, mo, cp	uph in pegmatite; mo, py, po and cp in hornblende granite	7, 8, 9, 78, 105, 153
982a	U	northeast of Lower Foster Lake	11	uph	pegmatite	90, 91, 92, 99, 130, 131, 153
982b	U	north end, Lower Foster Lake	11	uph	pegmatite	90, 91, 92, 99, 130, 131, 153
983	U (Mo)	Rona showing, Upper Foster Lake	11	uph, mo	radioactivity at pegmatite/ pelite contacts	2, 69, 130, 131, 145
984	U	west of Chatwin Lake	11	uph	pegmatite	130, 131, 145
985	U (Th, Ce, La)	Kulyk Lake showing	11	mz, uth	fractures with granite zone in biotite gneiss	130, 131, 145
986	U	west of MacPherson Lake	11	gum	biotitic lenses in pegmatite	227, 229
987	Zn	Lower Foster Lake, opposite Grand Rapids	11	sp	biotitic inclusion in biotite granite	91

SMDI No.	Elements Present	Name of Occurrence/ General Location	NTS 74A-	Minerals Present	Host Rock/ Structures and Remarks	Reference Numbers
988	Ag (Ba, Pd, Mo, Y, V, Sr)	east of Brule Lake	12	Ag (mineral phase not identified)	arkosic gneiss and pegmatite segregations	184
989	Cu	east of Bonville Lake	12	mal, cct	meta-arkose boulders	93, 146, 151
990	Fe (C)	northwest of Pederson Lake	12	po, py, gf	calc-silicate rock, calcareous pegmatite	53, 54, 151
991	Fe (C)	north of Collard Lake	12	po, py, gf	calc-silicate rock, calcareous pegmatite	53, 54, 151
992	Fe	northwest of Bonville Lake	12	py	meta-arkose	151
993a	U	northeastern Kaun Lake	12	uph	pegmatite in biotite gneiss	130, 131, 220
993b	U	west of Daly Lake	12	uph	not reported	130, 131, 220
993c	U	southeast arm, Kaun Lake	12	uph	foliation planes in pegmatite	130, 131, 220
994	Fe	Eagle Lake, west of Flavel Lake	13	hem, il	massive pod and disseminations in pegmatite	60, 160, 173, 174
995	Au (Ag, Cu, Fe)	Art showing, north of Thomson Bay	14	Au, Ag, cp, py, ca	fractures in metasediment	5, 51, 100, 173, 174, 212
996	Cu (Fe)	East Burbidge Lake prospect	14	cp, py, po	argillaceous bands in quartzite and pelite	92, 94, 95, 173, 174
997	Cu (Fe)	north of 'Joe' U showing	14	cct, cp, mal, py	meta-arkose	103, 107, 112, 173, 174
998	Cu	south end, Neil Lake	14	mal, az	calcareous meta-arkose	173, 174
999	Th (U)	east of Karin Lake	14	th	pegmatites in pelitic gneiss	100, 173, 174
1000	U (V)	west shore and north end, Burr Lake	14	pch, ur, car	calc-silicate rock; northeast- and northwest-trending fractures	4, 145, 173, 174, 234
1001	U (Mo, Th)	Craig Bay, Upper Foster Lake	14	uph, mo	fractures and biotitic layers, metasediments and pegmatite	100, 108, 109, 173, 174, 223
1002a	U (Cu, C)	'Joe' U showing, north of Burbidge Lake	14	ant, cp, cct	ant in northeast-trending fractures in mafic dyke	54, 65, 172, 173, 174, 234
1002b	Cu	near 'Joe' showing	14	cp, cct	arkosic boulders	54, 65, 172, 173, 174, 234
1003	U (Mo, Fe)	southwest end of Vee Lake, east of Thomson Bay	14	uph, pch, mo, py	mineralized rims on biotitic layers in pegmatite	56, 100, 108, 109, 174, 175, 223
1004	U (Mo, Fe, C)	west shore, Pegmatite Lake, east of Thomson Bay	14	uph, mo, py, gf	uph in fractures, biotitic layers; py, mo in pegmatite	56, 100, 108, 109, 173, 174, 223
1005	U (Th, Fe)	North Pipe Lake showing, northeast of Thomson Bay	14	pch, py, po thu	pch in hornblende megacrysts and joints in calcareous hornblende-rich pegmatite in biotite gneiss	56, 100, 108, 109, 173, 174, 223
1006	U (Th, C)	South Pipe Lake showing, east of Thomson Bay	14	uph, thu	pegmatite in pelite	56, 100, 108, 109, 173, 174, 223

SMDI No.	Elements Present	Name of Occurrence/ General Location	NTS 74A-	Minerals Present	Host Rock/ Structures and Remarks	Reference Numbers
1007	U (Th, Fe)	Sand-Zed Lakes, northeast of Thomson Bay	14	uph, py	pegmatite in pelite	100, 108, 109, 173, 174, 223
1008	U (Th, Fe)	Sand Lake, northeast of Thomson Bay	14	pch, uph, py hem	pch on joints, pegmatite/pelite contacts	100, 108, 109, 173, 174, 223
1009	U (Th)	near north end, Flavel Lake	14	uph	fractures in pegmatite	100, 108, 109, 173, 174
1010	U	north of Burd Lake (north of Thomson Bay)	14	pch	fault zone	100, 108, 109, 173, 174
1011	U (Th, C)	west Shore, Karin Lake	14	u, gf	pegmatite in pelite	100, 108, 109, 173, 174
1012a	U (Th)	Tojo showing, southwest of Flavel Lake	14	uph	pegmatite, in metasediments	100, 108, 109, 173, 174
1012b	U (Cu, C)	boulder train, north-northeast of Tojo showing	14	uph, bo, mal, cp, gf	pegmatite, metasediment	100, 108, 109, 173, 174
1013	U (Th, Cu, Mo, Fe)	Marilyn Bay, Upper Foster Lake	14	uph, py, mo, cp	white pegmatite	100, 108, 109, 173, 174, 222, 223
1014	U (Th)	northeast of Neil (Knob) Lake	14	u	pegmatite, in meta-arkose	100, 108, 109, 173, 174
1015	U	east of Karin Lake	14	u	near granite/metasediment contact	100, 173, 174
1016	Cu	northwest of Janice Lake	15	cu, cct, az, cp, bo, mal	metaconglomerate	96, 97, 98, 102, 106, 170, 171, 189, 234
1017	Cu (Ag, Pb, Zn)	Kaz Lake	15	cu, cct, gn, mal, sp	metaconglomerate	77, 96, 97, 98, 107, 170, 171, 189
1018	Cu (Ag, Pb, Au, Zn)	Rafuse Lake	15	cct, cu, cv, mal, cp, bo, az	metaconglomerate	96, 102, 106, 110, 170, 171, 189
1019a	Cu	Juno Lake	15	cct, mal	argillaceous lamellae in meta-arkose	96, 97, 163, 189
1019b	Pb (Zn, Ag)	Wathaman boulder	15	gn, sp	veins and disseminations in massive quartzite	96, 97, 163, 189
1020	Cu (Fe, C)	east of Zap Lake	15	py, po, cp, gf	argillite	96, 102, 173, 177, 189
1021	Fe (C)	west of Ruby Lake	15	py, po, gf	argillite and quartzite	102, 103, 104, 164, 189
1022	Cu (Fe, Pb)	'A' Lake, southwest of Zap Lake	15	po, py, cp	argillaceous quartzite and quartzitic pelite	189
1023	Pb (Fe, Cu, As, Zn)	Narrow Lake (west of Pendleton Lake)	15	gn, po, py, asp cp, sp	argillite and quartzite	43, 140, 155, 174, 176, 188, 189
1877	Au (Mo, Fe)	Rod Main showing	01	Au, mo, py	quartz veins in diorite phase of Star Lake Pluton	224

Table 1b - Mineral Occurrences Not Identified in SMDI File[1]

SMDI No.	Elements Present	Name of Occurrence/ General Location	NTS 74A-	Minerals Present	Host Rock/ Structures and Remarks	Reference Numbers
[1]	Fe (C)	west-southwest of MacKenzie Rapids, Foster River	04	po, py, gf	calc-silicate and quartz-hornblende-biotite gneiss	71
[2]	U	southwest of Pylypow Lake	05	uph	granite	18, 23, 66
[3]	Fe	2 km east of north end, Rottenstone Lake	07	po, py, mag	biotite granulite	21, 22
[4]	Fe	west of Lower Rottenstone Lake	07	po, py, mag	paragneiss	21, 22
[5]	Fe (Cu)	south of Rottenstone Lake	07	py, po, cp	biotite gneiss, hornblende gneiss, granite, pegmatite	77, 206
[6]	U (Fe)	Horse Lake showing, southwest of Nordstrom Lake	13	pch, mag, uph	pegmatite segregations in biotitic rock	64
[7]	C	southeast shore, Costigan Lake	13	gf	graphite schist, in pelite	55
[8]	C	near Geikie River	14	gf	pelitic gneiss	5, 173, 174
[9]	Be	Hickson Lake Batholith	08	be	small pegmatite bodies	79

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[1] Occurrences deemed of metallogenic significance, but not meeting SMDI criteria

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Saskatchewan Energy and Mines

Saskatchewan Geological Survey

Map 252A. METALLOGENIC SERIES

FOSTER LAKE, NTS AREA 74A

SASKATCHEWAN

Scale 1:250,000

FIRST EDITION, 1986

METALLOGENIC NOTES

The main types of mineralization in the Foster Lake area are:

1) sediment-hosted Zn, Pb, Cu, Mo and Fe sulphides and oxide facies iron formation; these are mainly located in the Wollaston Domain, and include the Sito Lake Zn-Pb showing and the Janice - Rafuse - Kaz Lakes copper showings; some iron sulphide showings occur in the La Ronge Domain;
2) low-grade silver mineralization which does not favour any one domain or rock type;
3) gold in quartz-carbonate veins and quartz-sericite shear zones, mainly in Central Metavolcanic Belt of the La Ronge Domain;
4) uranium mineralization, locally with molybdenite, commonly in granitic and mafic pegmatite dykes, in pelitic rocks close to the Archean basement contact in the Wollaston Domain; several uranium showings occur in the La Ronge Domain;
5) Ni-Cu mineralization in gabbro and pyroxenite near the west side of the La Ronge Domain, and at Rottenstone Lake in the Rottenstone Domain;
6) miscellaneous mineralization including fluorite and corundum in the Wollaston Domain, and beryl in the La Ronge Domain.

1) Sediment-Hosted Mineralization

Zn-Pb Subtype

Zn-Pb mineralization occurs in several subparallel quartzite bands, which may have been repeated by folding, near an inlier of Archean granite (the Sito Lake granite). Mineralization is disseminated and consists of sphalerite-pyrite±galena±silver. Assays from Fable Lake (Saskatchewan Mineral Deposits Index (SMDI) No. 933), Sito Lake East (SMDI No. 944), Sito Lake West (SMDI No. 946) and Sito Lake Southwest (SMDI No. 947) range from 1 to 4 percent Zn and up to 3 percent Pb. A boulder (SMDI No. 1019b) of medium- to coarse-grained, massive quartzite with 16 percent Pb, 1 percent Zn and 170 g/t Ag was found east of the Juno Lake showing (SMDI No. 1019a) at the Wathaman River (169). This rock is similar in texture to that of the Marina showing on Johnson Lake, located 80 km to the northeast (50).

Potter (166, 167, 168) noted that weak Zn-Pb mineralization in feldspathic quartzite occurs at Robyn Lake and near Mackie Lake, 6 km to the north. By comparison, at the Sito Lake West, Sito Lake East and Fable Lake occurrences, the orthoquartzites are more extensive and grades of mineralization are correspondingly higher.

The depositional environment of the Wollaston Group, host rock to the Sito Lake Zn-Pb mineralization, is suggested to be "terrestrial-shallow marine to carbonate-depositing marine" (50), "partly marine close to a land mass partly sialic in nature" (152) and "shallow-water to sub-aerial in a tectonically quiet marine - terrestrial environment" (204).

Similar deposits occur elsewhere at George (Brakewell) Lake (NTS 64E), in quartzites which host drill-indicated reserves of 4.55 million t grading 2.65 percent Zn and 0.38 percent Pb. Interstitial sphalerite is the dominant sulphide (132). In the Largentière region of France, a large deposit grading 3.69 percent Pb, 0.61 percent Zn and 78 g/t Ag occurs in arkose and sandstone-conglomerate of the Lower Triassic Bundsandstein (15). In the Baltic Shield of Scandinavia, approximately 4.0 percent Pb, 0.3 percent Zn and 15 g/t Ag occur in quartzite, feldspathic sandstones, shales and siltstones of Upper Precambrian to Lower Cambrian (15) age.

At the Sito Lake West occurrence, Harper (113) argued for a diagenetic origin to explain the restriction of the mineralization to the upper half of the quartzite sequence (unit 6). The upper half of unit 6 may have acted as an aquifer, since pelitic material is more abundant above and below it; thus, mineralized connate water would be more restricted to open pore spaces in the quartzite. One drawback to the aquifer idea is that none of the other quartzite beds at Sito Lake West contain mineralization. A full explanation of the origin may involve a combination of both syngenesis and diagenesis, whereby the mineralization was initially precipitated syngenetically, then rewashed during diagenesis.

Zinc-dominant deposits such as Sito Lake and George Lake are anomalous in their low percentage of Pb. This may reflect an Archean basement in the George Lake and Sito Lake areas which is lead poor and/or zinc rich.

Another theory regarding the origin of stratiform Zn-Pb deposits is that they were deposited "from dense brines exhaled from sea-floor vents and flowing into depressions either nearby or far away" (111).

Future exploration within quartzites of the eastern portion of the Wollaston Domain will probably be productive of further Zn-Pb showings.

Copper Subtype

Copper occurrences in the southern portion of the Wollaston Domain include chalcopyrite in meta-arkose west of MacNeil Lake (SMDI No. 950) and east of Sommerfield Lake (SMDI No. 948b), chalcopyrite-bornite-pyrite at the Tosi showing (SMDI No. 930), and chalcopyrite-chalcocite near Fannon Lake (SMDI No. 949). To the north, chalcopyrite-pyrite-pyrrhotite occurs in quartzite bands in meta-arkose with local arsenopyrite, erythrite and silver mineralization at Astleford Lake (SMDI No. 971), in laminated quartzite and argillite at the East Burbidge Lake prospect (SMDI No. 996), in quartzitic metasediments near Zap Lake (SMDI No. 1022), and in biotite gneiss at Middle Foster Lake (SMDI No. 972).

Disseminated native copper-chalcocite is found in a zone approximately 0.8 km wide and 3 km long in the Janice - Rafuse - Kaz Lakes area (SMDI Nos. 1016, 1017 and 1018). Minor amounts of chalcopyrite-bornite-silver mineralization are also present. The mineralization at Rafuse Lake grades 0.7 percent Cu and forms several distinctive 'pods', outlined by ionization potential, soil geochemistry and diamond drilling. The chalcocite is most likely a primary constituent of the rock, while the native copper is probably of supergene origin (171). The sediments appear to have been deposited under shallow-water terrestrial to marine conditions (50), corresponding to a 'red-bed' sedimentary environment (165).

Deposits similar to the Janice - Rafuse - Kaz occurrences are found in the Zambian copperbelt where syngenetic chalcocite-bornite-chalcopyrite-pyrite mineralization occurs within quartzite, greywacke, conglomerate and argillite of Precambrian age (1200 to 1400 Ma) (169); in Precambrian cupriferous sandstones of the Udokan region of eastern Siberia (16); and in the Mansfield region of Permian age (169).

Cu-Mo Subtype

Molybdenite occurs with chalcocite and chalcopyrite in meta-arkose near Fannon Lake (SMDI No. 952), as disseminated and banded sulphides parallel to the foliation in quartzite lenses. Several bedrock occurrences and boulders with copper-molybdenite mineralization are present in the area, southwest of the north end of Fannon Lake.

Fe Subtype

Several metres of iron formation (oxide facies) were located by drilling at Partington Lake (SMDI No. 916). Elsewhere in the La Ronge Domain, pyrite-pyrrhotite zones with local sphalerite and rare chalcopyrite, galena and silver mineralization occur in the Central Metavolcanic Belt; pyrite and pyrrhotite also occur in metasediments north of Kenwood Lake (SMDI Nos. 964a and 965).

In the Rottenstone Domain, quartz-plagioclase-biotite±hornblende gneiss and biotite gneiss in migmatite are host to pyrite and pyrrhotite in several occurrences.

In the Wollaston Domain, iron-rich mineralization comprises pyrite-pyrrhotite-graphite, with local arsenopyrite, chalcopyrite, galena and sphalerite in metasediments on the eastern margin of the Wollaston Domain; pyrite-pyrrhotite mineralization in diopsidic gneiss west of Pederson Lake; and massive ilmenite-hematite in a zone, measuring 12 m wide and 45 m long, within diopsidic pegmatite at Flavel Lake.

2) Low-Grade Silver Mineralization

In the La Ronge Domain, low-grade silver mineralization (mineral species not identified) occurs in porphyritic rhyolite between Partington Lake and Narrow Lake (SMDI No. 900). Northeast of Rottenstone Lake, similar mineralization is present in a pyrite-pyrrhotite zone in quartz-feldspar-hornblende-biotite-garnet gneiss (SMDI No. 960c) and, in the Wollaston Domain, in pegmatitic meta-arkose east of Brule Lake (SMDI No. 988). Silver is also found locally with sphalerite-galena in quartzites and in sympathetic association with chalcocite±chalcopyrite, in meta-arkose and metaconglomerate at Rafuse Lake.

3) Au in Quartz-(Carbonate) Veins and Quartz-Sericite Shear Zones

Two gold occurrences are located in the Wollaston Domain. Quartzitic shears at the Beaver Dam prospect (SMDI No. 937) contain pyrite and minor gold (51,72). Northwest of Karin Lake at the Vic (Art) occurrence (SMDI No. 995), cross-fractures near a contact between pelite and meta-arkose contain quartz-chalcopyrite-pyrite-calcite, with up to 12 g/t Au and 17 g/t Ag.

In the La Ronge Domain, most gold showings occur within the Central Metavolcanic Belt. In 1944, gold mineralization was first discovered on the east shore of Mallard Lake (SMDI No. 901), and the Jolu group of 27 claims was staked for Consolidated Mining and Smelting Co. of Canada Ltd. (now Cominco). Drilling by Consolidated in 1944-45 indicated a small ore shoot containing 20 000 t with a cut grade of 16 g/t Au. In 1973, a 45 t/day concentrator was built and 2100 t ore material trenched from an open pit. A 30° decline was driven on the main vein to a depth of about 24 m and a level established at a depth of 15 m. Ore reserves were given at the time as 16 500 t grading 21 g/t to a depth of 24 m. In late 1974, a new 30° decline was completed to the north and below the old one. Mining ceased in 1975 after a total of 4500 t were milled, with mill heads running at about 10.5 g/t Au (51). The property was acquired by Mahogany Minerals Resources, Inc. in 1982. An exploration program began in 1984 which confirmed and increased reserves in the Mallard Lake zone, now estimated at 24 000 t of ore grading 22.3 g/t (0.65 oz./ton), but more importantly led to discovery of the new Rod Main and Rod South zones (SMDI No. 1877) of mineralization, some 500 m to the south. Current estimates suggest a potential in these zones for 410 000 t of ore grading 25.4 g/t (0.74 oz./ton).

The geological setting at Mallard Lake is similar to that of the adjacent Star Lake 21 zone property. The composite Star Lake Pluton, which ranges in composition from granite in the core to diorite in the margin, intrudes Aphebian (ca. 1875 Ma) mafic to felsic volcanic flows and pyroclastics and interlayered sediments (biotite schists), metamorphosed to lower amphibolite facies grade. The Mallard Lake and Lake zones are hosted by metasediments at the contact of the Star Lake Pluton, the Rod zones by a dioritic phase of the pluton (224).

Gold-quartz mineralization in both the Mallard and Rod-Main zones is structurally controlled within N60°E trending shear zones marked by mylonites, particularly apparent in the Star Lake Pluton. Intersection with more northerly trending N35°E fracture systems is possibly significant. The plunge of the gold-quartz mineralization varies from 30°SW in the Rod Main zone to 12°SW in the Mallard zone. These compare with a plunge of 60°SW for the Star Lake 21 zone mineralization located in a similar northeasterly trending shear zone in the Star Lake Pluton.

The Rod South and Lake vein at Mallard Lake appear to be gold-quartz vein fillings of N80°E trending tension gashes (News Release, Mahogany Minerals Resources Inc.).

The gold-quartz mineralizations in these zones are characterized by pyrrhotite, pyrite and chalcopyrite. Visible gold is common and usually associated with molybdenite. At Mallard Lake there is also significant tourmaline. Gold values tend to be erratic, in part due to the coarseness of the gold; however, the tension fracture style of mineralization appears more consistent and of higher grade.

Drilling in 1947 on the Jojay property (SMDI No. 902) outlined a zone of 68 500 t grading 8.5 g/t (0.25 oz./ton) Au (51). The mineralization in a quartz-carbonate stockwork resembles that at Mallard Lake, with the addition of galena and sphalerite. Several other gold showings, consisting of quartz-sericite±carbonate in northeasterly trending shear zones, occur to the north. The Jojay zone truncates horizons in the volcanics and in places exhibits evidence of brecciation occurring close to the contact between mafic volcanics to the east and sediments to the west. Drill-indicated reserves are 68 000 t grading 8.6 g/t Au with an average width of 2.7 m and a length of 183 m. Four showings located between Centre and Tower Lakes contain shear zones trending N70°E to N90°E, and are related to the prominent east-trending Byers Fault. The Tower Lake East gold deposit has reserves of approximately 1.3 million tons, grading 3.43 g/t Au (Newsletter, Golden Rule Resources Ltd.). Emphasis is not only on large tonnage low-grade open pit potential, but on higher grade underground reserves with the discovery of the Pat zone. In one showing south of Copp Lake, Au, Ni and Cu values were associated with pyrite-pyrrhotite in quartz-hornblende-biotite gneiss.

Geological criteria favourable for gold concentration in the Mallard Lake area appear to include the proximity to a differentiated or composite pluton ranging in composition from basic to acid, the presence of shear zones ranging from very strongly foliated (augen and flaser fabrics) to protomylonitic and mylonitic, the development of fracture systems or dilative zones in response to shearing, and the emplacement of sulphide-bearing quartz as fissure veins. The incorporation or intrusion of basic to acid material as xenoliths, roof pendants and dykes in the pluton may also be significant (225).

The presence of possible stratiform mineralization in the area north of Star Lake is significant. Volcanics in the western part of the La Ronge Domain may have been underexplored in the past. Greywacke-derived sediments contain intercalations of laterally-extensive sulphidic iron formations occurring within amphibolitic calc-silicate-bearing sequences that resemble the 'transition zone' or Kisseynew metallotect of the Kisseynew Domain. Similar rocks in the Kisseynew gneisses of Manitoba host significant gold mineralization in several places (51).

4) Uranium Mineralization

In the La Ronge Domain, uranophane staining occurs in 'granite' pegmatite dykes at four localities: southeast of Maribelli Lake (SMDI No. 921), northeast of Hickson Lake (SMDI No. 966), at Copp Lake (SMDI No. 968) and north of Copp Lake (SMDI No. 967). In the southern part of the Wollaston Domain, it is present in eight showings of granite pegmatite. In one of these (SMDI No. 939a), there is an association with fluorite in fractures.

Thirty-four uranium showings have been discovered in the northern part of the Wollaston Domain. Most contain uranophane-uraninite±molybdenite±chalcopyrite mineralization in pegmatite. Segregations are contained within and likely derived by anatexis from pelitic metasediments of the Wollaston Group, particularly those near or at the base of the succession, which are often graphitic. Much radioactivity is the result of small submetallic grains, identified in several cases as uraninite (223). Anthraxolite, brannerite, davidite and pitchblende are other less common radioactive phases recognized. In some cases, the uranium mineralization occurs in calc-silicate gneiss and in mafic pegmatites. At the Burr property, pitchblende and uraninite occur in a calc-silicate gneiss subunit of a meta-arkosic unit. The calc-silcate gneiss is coincident with a N40°E trending shear zone (SMDI No. 1000). There is reportedly 32 000 t of ore grading 0.18 percent U_3O_8 on this property (176).

The most likely source of uranium in pegmatites is the host paleosomal rocks. Uranium becomes concentrated by the same high-grade metamorphic processes which formed the segregation pegmatites. In general, with progressive metamorphism of the country rocks from amphibolite to granulite facies, there is a disappearance of hydrous phases and a decrease in uranium. The mobile uranium seems to concentrate as uraninite in the corresponding anatectite along cleavage surfaces of hydrous phases.

Sedimentary rocks of the Wollaston Group with average uranium metal content may provide a viable source for later metamorphic/anatectic concentration under favourable conditions of high ionic mobility. Some lithologies, however, such as carbonaceous shale (pelite), phosphates and evaporites, may have been anomalously enriched in uranium.

Exploration for such occurrences should be aimed towards pegmatites which are hosted by the basal pelite assemblage, since the greater potential for economic occurrences of syngenetic uranium occurs in these rocks. Other occurrences hosted by calc-silicate, meta-arkose and granite gneiss tend to be of limited areal extent. As the basal pelitic assemblage is commonly graphitic and occurs close to large basement granitic gneiss masses, various geophysical techniques can be used to outline targets. The Wollaston Domain is considered to hold the greatest potential for further discoveries of uraniferous pegmatites, since the Lower Proterozoic 'shelf succession' is more extensively developed than in the La Ronge, Mudjatik and Virgin River domains (223).

5) Ni-Cu Mineralization in Gabbro and Pyroxenite

Nickeliferous pyrrhotite, chalcopyrite and minor pyrite and graphite occur in a sill of gabbroic to pyroxenitic composition near Reef Lake (SMDI No. 963) on the west side of the La Ronge Domain. Six kilometres to the northeast, a similar intrusive body contains minor pyrrhotite-chalcopyrite-pyrite (SMDI No. 962a). On Logue Lake (SMDI No.926), disseminated pyrrhotite and chalcopyrite occur along the margin of a body of metagabbro and pyroxenite.

In the Rottenstone Domain, a small pyroxenite dyke within migmatite, south of Nagel Lake, contains low values in Cu and Ni (SMDI No. 928a), while 0.8 km to the south, gabbro contains a minor zone of pyrite-pyrrhotite-chalcopyrite (SMDI No. 928b).

The Rottenstone or Hall deposit is located near the southeast shore of Rottenstone Lake. The deposit was mined between 1965 and 1968 (178). A total of 26 100 t of ore produced 722 404 kg of Ni, 451 143 kg of Cu, 63.1 kg of Pt, 112 kg of Pd and 11.3 kg of Au. Exploratory work northeast of the deposit located only barren sulphides in sedimentary gneiss (internal file, Mines Branch, Saskatchewan Energy and Mines, Regina). The ore zone consists of a mineralized synclinal roof-pendant or inclusion of pyroxenite, in northeast-trending banded migmatites. Sulphides comprise about 45 percent of the pyroxenite, which forms a shallow, flat-lying lens 55 m long, 37 m wide and 9 m thick. Mineralization consists of finely disseminated pyrrhotite, violarite, annabergite, chalcopyrite and bornite, as intimately associated masses containing pentlandite, sperrylite, sphalerite, cubanite and minor pyrite and malachite. Gangue minerals are serpentine, olivine, hypersthene, chlorite, siderite, cordierite, magnetite and graphite.

Recent work on the Rottenstone orebody by Hulbert (120) has shown that these Ni-Cu ores are better endowed (in g/t) in Pt, Pd and Au than comparable ores of the Bushveld Complex in South Africa. One composite sample contained 3.3 percent Ni, 2.4 percent Cu, 75 ppm Ru, 190 ppm Rh, 7400 ppm Pd, 2900 ppm Pt, 120 ppm Os, 110 ppm Ir and 940 ppm Au. Rocks and ores are greatly enriched in Zn. Olivines are extremely depleted in Ni in both sulphide-bearing and sulphide-free samples, as a result of co-precipitation with a Ni-Fe-Cu sulphide melt. This characteristic may prove to be a significant indicator of hidden mineralization. Chromite is unusually high; the Cr_2O_3 content varies from 17 to 43 percent. Graphite in ore samples and in the silicates, as in the Bushveld Complex, is another good prospecting clue. Sulphur isotope data indicate that the sulphur in the Rottenstone ore is mantle derived, and not the result of magma contamination by sedimentary-derived sulphur.

South of Rottenstone Lake, at the Tremblay-Olson showing, a lens of hypersthene pyroxenite occurs in migmatitic gneiss. Mineralization consists of pyrrhotite with chalcopyrite, with four samples from the showing containing 0.062 to 0.907 percent Cu and 0.16 to 1.31 percent Ni. Drill core assayed 1280 ppb Pt, 500 ppb Pd and 39 ppb Au at a depth of 61 m.

6) Miscellaneous Mineralization

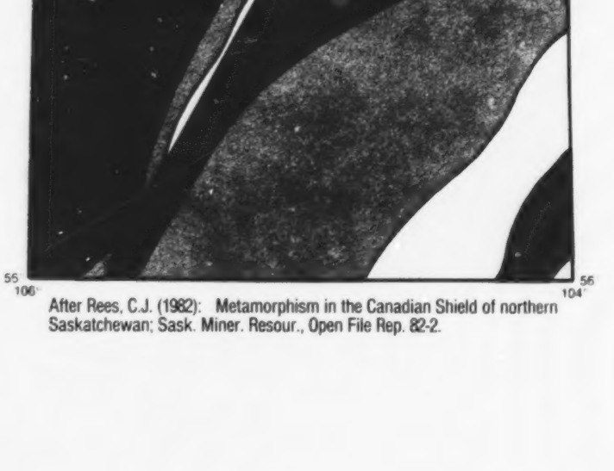
Corundum of poor gem quality occurs in syenite sills in migmatitic biotite gneiss west of the Foster River (SMDI No. 938). The area may have some potential for other alkaline intrusions and possible attendant Nb, Ta and REE mineralization, particularly as exploration has not been focussed towards these rocks or commodities.

Beryl occurs in biotitic and/or muscovitic pegmatites within the Hickson Lake Batholith; however, no information on the Li, Be, REE, Sn and W contents of these rocks is available. The concentrations of other lithophile elements in these rocks have been determined (79).

Fluorite is found in several occurrences near the eastern margin of the Wollaston Domain: with specular hematite and white calcite on the west side of MacNeil Lake (SMDI No. 950), with low silver content on the northwest shore of Fannon Lake (SMDI No. 951) and with uranophane in fractures in pegmatite northeast of Robyn Lake (SMDI No. 939a).

Moderate concentrations of thorium as thorite have been found east of Karin Lake in pelitic gneiss, near the Archean-Wollaston Group contact (SMDI No. 999).

METAMORPHIC MAP



After Rees, C.J. (1982): Metamorphism in the Canadian Shield of northern Saskatchewan; Sask. Miner. Resour., Open File Rep. 82-2.

Note: All recorded metamorphic features in this area have been ascribed to one major metamorphic event of Hudsonian age.

Metamorphic Facies	Isograds
Upper amphibolite and granulite (undivided)	
	hypersthene
Upper amphibolite	
	cordierite+garnet (muscovite out)
Middle amphibolite	
	sillimanite
Lower amphibolite	
	staurolite, cordierite, diopside
Lower amphibolite and upper greenschist (undivided)	
Upper greenschist	
	garnet, andalusite
Mainly synorogenic plutonic rocks, regional metamorphic grade undefined	

SOURCES OF COMPILATION

The geological base for this map is an uncoloured and screened version of Map 228A, Compilation Bedrock Geology Series, by G. Ray (1980), revised by R. Macdonald and M.W. Thomas (1983).

Other major sources of information are:

1) Saskatchewan Mineral Deposits Index, computer list and computer-printed map at 1:250 000 scale.
2) Index to Assessment Work in the La Ronge Mining District of Saskatchewan, by A. Fuzesy (1979); Saskatchewan Energy and Mines Misc. Rep. 79-4.
3) Unpublished non-confidential Assessment Files, Saskatchewan Energy and Mines, Regina.

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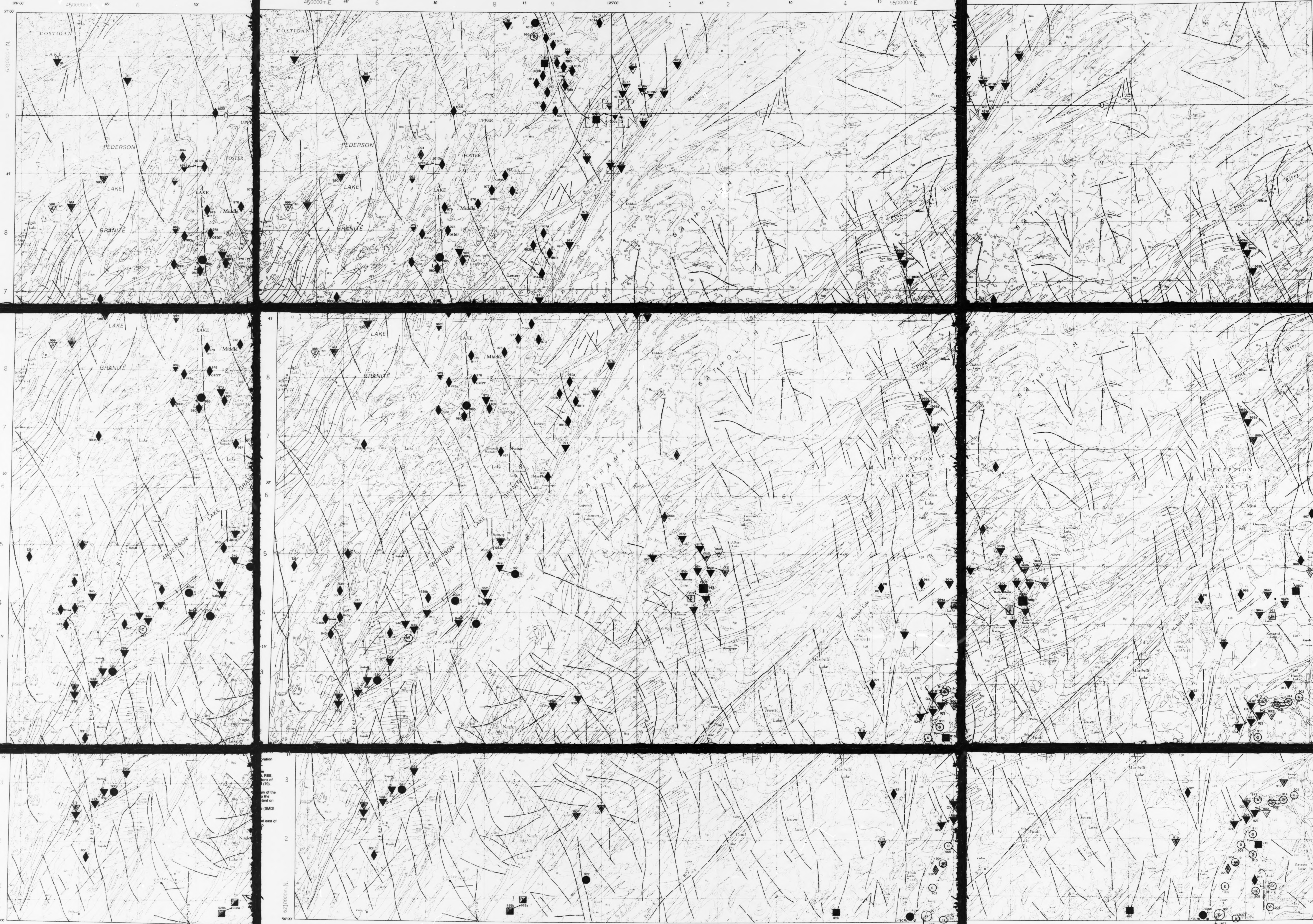
Scott, B.P. (1986): Metallogenic Map Series, Foster Lake, NTS Area 74A; Saskatchewan Energy and Mines, Report 252 (1:250 000 scale map with marginal notes).

Although the Department of Energy and Mines has exercised all reasonable care in the compilation, interpretation and production of this map, it is not possible to ensure total accuracy, and all persons who rely on the information contained herein do so at their own risk. The Department of Energy and Mines and the Government of Saskatchewan do not accept liability for any errors, omissions, or inaccuracies that may be included in, or derived from, this map.



BASE MAP LEGEND

Base map, with acknowledgement, by Army Survey Establishment, R.C.E. Information depicted current as of 1961. Printed 1964.

GRID ZONE DESIGNATION 13V

100,000 M SQUARE IDENTIFICATION

DP	EP
DN	EN

TO GIVE A REFERENCE TO NEAREST 1000 METRES

EXAMPLE CABIN

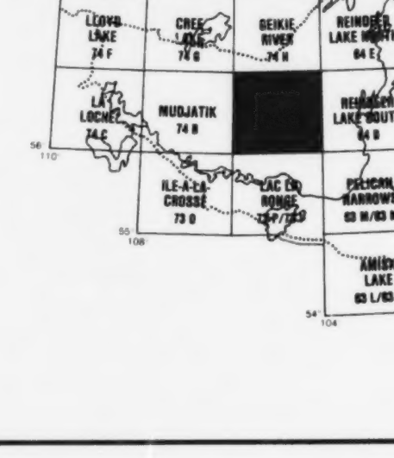
SQUARE Read letters of 100,000 m. square	EN
EASTING Read number on grid line immediately to left of point Estimate tenths of a square from this line eastward to point	0 8
NORTHING Read number on grid line immediately below point Estimate tenths of a square from this line northward to point	08 5 2
MILITARY GRID REFERENCE (to nearest 1,000 metres)	52 EN0852
If reporting beyond 18° in any direction prefix Grid Zone Designation as	13VEN0852

TEN THOUSAND METRE UNIVERSAL TRANSVERSE MERCATOR GRID ZONE 13

Horizontal control point ▲
Boundary monument ⊡
Spot elevation, in feet 2550.
Rapids; falls
Marsh or swamp
Depression contours
Surveyed line
Road, all weather
Wagon or winter road
Trail or portage
Town □
Village or settlement ○
Post office P
Building •

Transverse Mercator Projection
North American Datum 1927
Contour Interval 100 feet
Elevations in feet above mean sea level
Magnetic declination 19°30' east at centre of map 1963
Annual change (decreasing) 3.0'

INDEX TO MAPS OF THE METALLOGENIC SERIES



INDEX TO 1:50 000 SHEETS COVERING 74A

13	14	15	16
12	11	10	9
5	6	7	8
4	3	2	1

KEY TO COLOURS AND NOTATION IDENTIFYING THE CHIEF ELEMENTS

- Copper
- Iron — Facies of banded iron formation: oxide (OX)
- Lead
- Molybdenum
- Nickel
- Silver
- Uranium
- Zinc
- Gold
- **Miscellaneous: including beryl (be), fluorite (fl), graphite (gf), platinum group metals (PGM), rare earths (REE); other elements indicated by their chemical symbols**

EXPLANATION OF SYMBOLS

Saskatchewan Mineral Deposits Index Number — 970 gf

Shape of symbol denotes type of mineralization

Letter and symbol size define classification of occurrence

Colour(s) identify the main element(s) of interest

Suffix denotes main element present in miscellaneous category

Italicized number in square brackets indicates that mineral occurrence is not identified in SMDI file

KEY TO SYMBOLS DENOTING CLASS OF OCCURRENCE AND TYPE OF DEPOSIT

CLASS OF MINERAL OCCURRENCE

A *Float* - including frost heave, scree, glacial, fluvioglacial and fluvial deposits

B *Bedrock*

C *Initial Prospect*: preliminary exploration (detailed prospecting/mapping, grab sampling, geochemistry, geophysics)

D *Intermediate Prospect*: advanced exploration (trenching, chip/channel sampling, drilling); tonnage and grade not outlined

E *Advanced Prospect*: drilled; tonnage and grade outlined

G *Abandoned Mine*

TYPE OF MINERALIZATION

▽A	▽C	▽G	Disseminated to massive mineralization in sedimentary or volcanic rocks (includes stratabound and stratiform mineralization)
◇B	◇D	◇G	Disseminated to massive mineralization, in or associated with acid or intermediate plutonic or hypabyssal igneous rocks, or igneous-appearing metamorphic rocks (includes mineralization in granite, granite gneiss, migmatite, pegmatite, aplite, etc.)
□A	□E	□G	Disseminated to massive mineralization, in or associated with basic or ultrabasic, plutonic or hypabyssal rocks (includes mineralization in gabbros, norites, pyroxenites, serpentinites, etc.)
○B	○C	○G	Fracture-fill deposits (includes mineralization in veins, seams, shears, shear breccias, faults, fault breccias)
☆A	☆D	☆G	Skarn mineralization
⬡B	⬡E	⬡G	Unspecified

GEOLOGICAL LEGEND[1]

QUATERNARY

- Qr — **Recessional moraine**: unconsolidated sand and gravel of the Cree Lake moraine

PROBABLY PHANEROZOIC

- I — **Meteorite impact rocks**: impact breccia (suevite) and melt material (karnaite) at Gow Lake

PROBABLY NEOHELIKIAN/HADRYNIAN

- dd — **Diabase-gabbro**: fine to very coarse grained, massive, subophitic

LATE APHEBIAN (HUDSONIAN[1])

- X — **Cataclastic rocks**: sheared gneisses and mylonites of the Needle Falls and Paull River Shear Zones

WOLLASTON DOMAIN

LATE APHEBIAN (HUDSONIAN)

- Wg — **Monzogranite-granodiorite**: medium to very coarse grained, massive to weakly foliated, generally containing less than 10 percent biotite ± hornblende ± garnet ± hypersthene; local xenoliths of metasediment; locally intrusive into Wollaston Group; *possible Archean granitoid highly remobilized during the Hudsonian Orogeny*

EARLY TO MIDDLE APHEBIAN

Wollaston Group

- Wsh — **Quartz-muscovite schist**: pelitic to psammopelitic, fine to medium grained, ± biotite; locally intensely sheared; may, in part, be equivalent in age to unit Wsv
- Wcn — **Calc-silicate gneiss**: generally quartz-poor heterogenous calcareous metasediments with local sodium-rich rocks; highly variable texture, grain size and colour, locally anatectic with intrusive features, including massive calc-silicate rock, well-layered calc-silicate gneiss and minor marble; ± tremolite-actinolite ± diopside ± albite ± carbonate ± epidote ± sphene ± scapolite; *derived from impure limestone, dolomite, marl and minor evaporite*
  - Wcb: massive, coarse variety of gabbroic appearance ('diopside pseudo-gabbro')
- Won — **Polymict metaconglomerate**: deformed pebbles and cobbles of quartzite, granite and amphibolite in psammitic matrix
- Wrn — **Psammitic gneiss**: fine to coarse grained, well foliated to massive; calcareous psammite containing less than 20 percent calc-silicate minerals (generally tremolite-actinolite ± diopside ± epidote); biotitic psammite containing up to 10 percent biotite ± magnetite
  - Wrq: impure metaquartzite
- Wpsn — **Pelitic to psammopelitic gneiss and schist**: moderately to intensely foliated, containing more than 10 percent mafic minerals (commonly biotite) ± garnet ± cordierite ± sillimanite ± graphite

PROBABLY EARLY APHEBIAN (LATE ARCHEAN?)

- Wsv — **Metasedimentary and metavolcanic rock**: variable unit, fine to coarse grained, generally well foliated, locally highly sheared; *probably derived from mudstone, sandstone, arkose, conglomerate, acid to basic volcanic and volcaniclastic rocks*

UNCONFORMITY

ARCHEAN, DEFORMED AND METAMORPHOSED WITH APHEBIAN SUPRACRUSTAL ROCKS DURING THE HUDSONIAN OROGENY

- Wm — **Amphibolite**: amphibole gneiss, metagabbro and metadiorite; medium to coarse grained, weakly to well foliated
- Wfn — **Foliated granitoid rock**: syenogranitic to granodioritic, medium to coarse grained, generally moderately to well foliated; biotite ± hornblende bearing;
  - Wfh: well foliated to massive, dark and waxy, ± clinopyroxene ± hypersthene

References cited in the legend are listed on Map 228A, Compilation Bedrock Geology Series.

ROTTENSTONE DOMAIN

APHEBIAN (HUDSONIAN)

WATHAMAN BATHOLITH

- Rgd — **Biotite-hornblende granodiorite**: medium to coarse grained, massive to foliated
- Rgp — **Biotite monzogranite-granodiorite**: medium to very coarse grained, massive to well foliated, equigranular to megacrystic, ± muscovite
- Rgm — **Monzogranite-granodiorite**: containing abundant xenoliths and rafts of amphibolite and amphibole gneiss derived from unit Pn

- Rgy — **Leucosyenogranite-leucomonzogranite**: coarse grained, massive to foliated, ± biotite ± muscovite ± garnet

ROTTENSTONE MIGMATITE COMPLEX

- Rgt — **Tonalite-trondhjemite**: medium to coarse grained, equigranular, massive to foliated, locally containing xenoliths of migmatitic gneiss (unit Rng); *largely derived by anatexis of unit Rng*
- Rm — **Amphibolite**: medium to coarse grained, well foliated; includes coarse grained, massive to weakly foliated metagabbro-metadiorite
- Rng — **Migmatitic gneiss**: of widely varied texture, with greater than 30 percent paleosome of pelitic to psammitic gneiss with some amphibolite; medium to coarse grained, massive to well foliated, ± biotite ± garnet ± sillimanite; neosome of tonalitic to trondjhemitic to syenogranitic composition

PETER LAKE DOMAIN

APHEBIAN AND ARCHEAN ROCKS, STRONGLY REWORKED, PROBABLY LATE IN THE HUDSONIAN

PARKER LAKE GNEISSES

- Pn — **Hornblende-biotite gneiss**: tonalitic to gabbroic composition, medium to coarse grained, with minor metagabbro and amphibolite

LA RONGE DOMAIN

PROBABLY 'HUDSONIAN s.s.'

- Lbd — **Diorite-quartz diorite-quartz monzodiorite**: medium to coarse grained, masive to well foliated, equigranular to megacrystic; ± biotite ± hornblende
- Lgd — **Granodiorite-monzogranite**: medium to coarse grained, massive to well foliated; biotite ± muscovite ± hornblende
- Lbu — **Metadiorite-metagabbro-metapyroxenite**: medium to coarse grained, massive to weakly foliated

PROBABLY APHEBIAN

- Lvg — **Migmatitic gneiss**: containing metavolcanic paleosome (unit Lvn) and granodiorite (unit Lgd)
- Lvn — **Metavolcanic rock**: metamorphosed acid to basic volcanics with volcaniclastics and psammitic to pelitic metasediments
- Lon — **Metaconglomerate**: with minor pelitic metasediment, metavolcanic and volcaniclastic rock
- Lsn — **Metasediment**: moderately to intensely foliated; pelitic to psammitic gneiss and schist ± biotite ± muscovite ± garnet ± chlorite ± sillimanite ± graphite; minor metavolcanic and volcaniclastic rock

SYMBOLS

Approximate area of aubundant bedrock exposure

Geological contact: defined to approximate, inferred

Structural lineament, possible to probable fault, as interpreted from geological, geophysical and/or airphoto evidence

Major fold axial trace, antiform, synform

Trend and approximate dip of dominant foliation surface: dip shallow (0-29°), moderate (30-59°), steep (60-84°), subvertical (85-90°)

Structure form lines, interpreted from airphoto evidence

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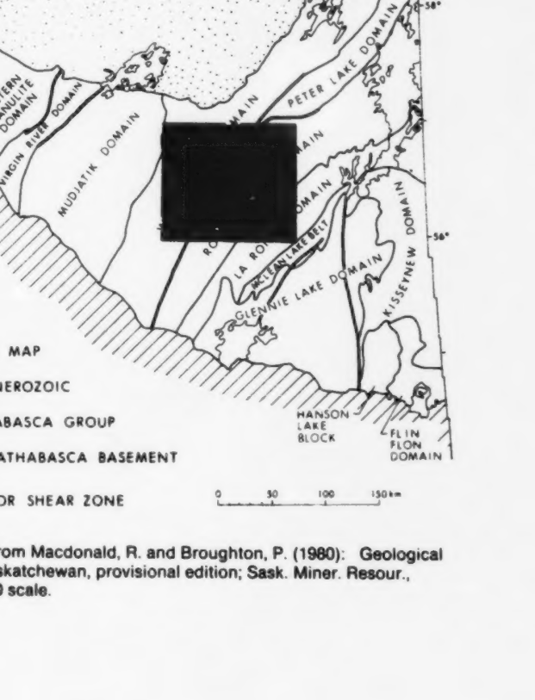
[1] The term 'Hudsonian' has been used by most authors in Saskatchewan to indicate the tectonometamorphic activity or orogeny which affected Aphebian rocks and older basement during the interval approximately 1900 to 1650 Ma ago. In this legend, the term 'Hudsonian s.s.' (sensu stricto) refers to the more specific peak of activity fixed by Rb-Sr isochron determinations on plutonic rocks at c. 1750 to 1740 Ma (see Douglas, 1980; Bell and Macdonald, 1982)

LITHOSTRUCTURAL DOMAINS OF THE PRECAMBRIAN SHIELD IN SASKATCHEWAN



Modified from Macdonald, R. and Broughton, P. (1980): Geological map of Saskatchewan, provisional edition; Sask. Miner. Resour., 1:1 000 000 scale.

Map 252A. Metallogenic Series
FOSTER LAKE, NTS AREA 74A
SASKATCHEWAN
1:250 000 Scale